

WHAT IS CLAIMED IS:

1. A method of obtaining a set of measurements for making a position determination comprising effecting an optical ranging measurement for each of at least two spaced apart stations with respect to a common distant object moving on a path of travel which is at least approximately known wherein the optical ranging measurements utilize respective signals transmitted from the stations so as to impact the object at substantially the same time.

2. A method as claimed in claim 1, wherein optical ranging measurements are effected for a plurality of positions of the moving object to provide a set of measurements for said position determination by triangulation techniques.

3. A method as claimed in claim 1, wherein said optical ranging measurement is a laser ranging measurement.

4. A method as claimed in claim 1, wherein said distant moving object is an orbiting satellite.

5. A method as claimed in claim 4, wherein the path of travel of the satellite is known to an uncertainty of no more than 5 meters.

6. A method as claimed in claim 4, wherein the path of travel of the satellite is known to an uncertainty of not more than 1.5 meters.

7. A method as claimed in claim 4, wherein said respective signals impact the satellite with a separation time of no greater than 50ns.

8. A method as claimed in claim 4, wherein said respective signals impact the satellite with a separation time of no greater than 10ns.

9. A method as claimed in claim 1, further comprising the steps of making an initial set of optical ranging measurements from the spaced apart stations using a calculated transmission time from the stations to said moving object, determining any time intervals between the impacts of the respective transmitted signals at the object having a predetermined value above a value considered to entail one or more synchronization errors and effecting a further set of optical ranging measurements from said stations using one or more modified transmission times determined from said synchronization error(s).